

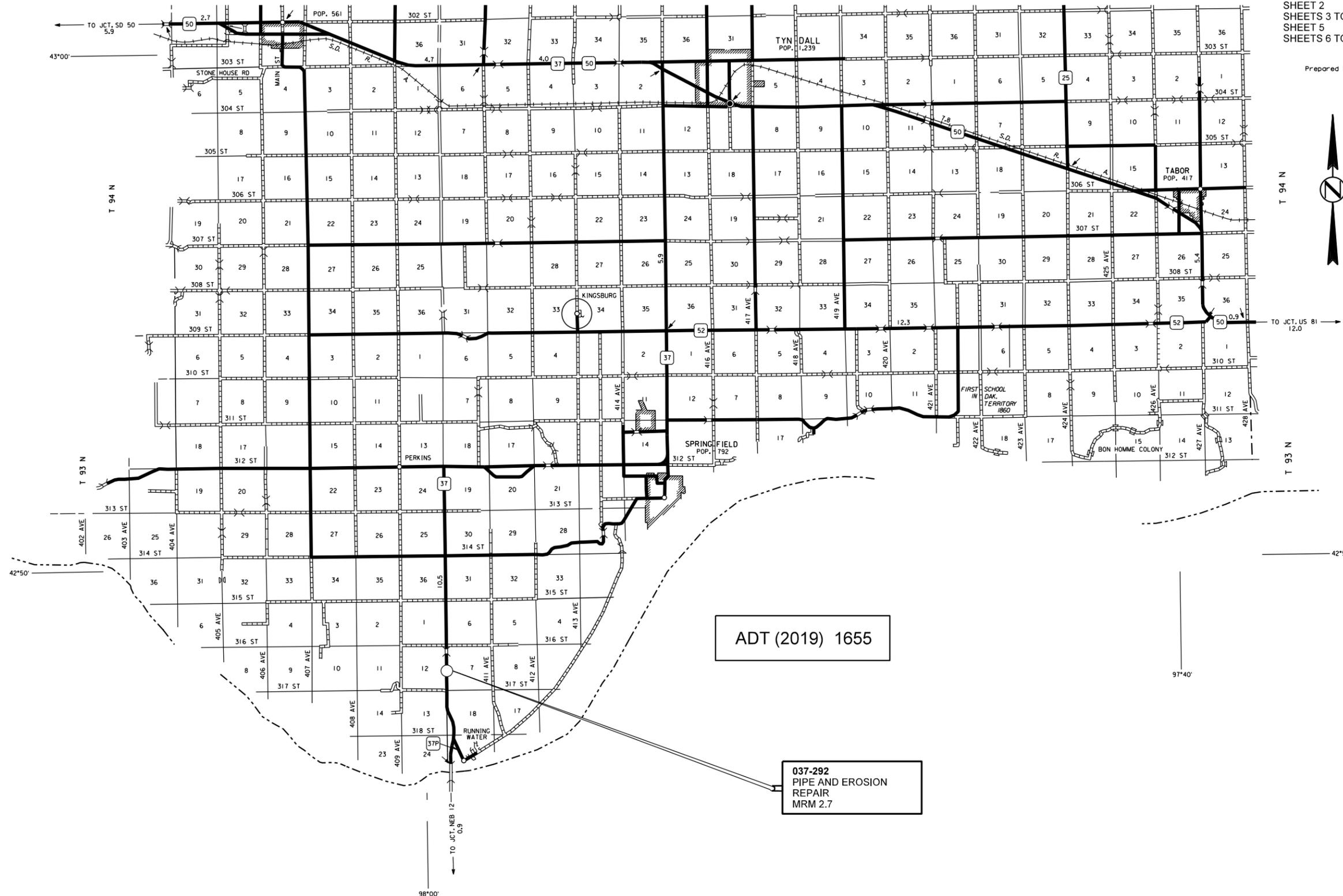
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|-----------------------|---------|-------|--------------|
| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
| | 037-292 | 1 | 10 |

037-292 BON HOMME COUNTY PIPE AND EROSION REPAIR PCN 162G

INDEX OF SHEETS

- SHEET 1 GENERAL LAYOUT WITH INDEX
- SHEET 2 ESTIMATE OF QUANTITIES AND NOTES
- SHEETS 3 TO 4 NOTES AND SIGN TABLE
- SHEET 5 TYPICAL SECTION
- SHEETS 6 TO 10 STANDARD PLATES

Prepared by Joseph Sestak



ESTIMATE OF QUANTITIES

| BID ITEM NUMBER | ITEM | QUANTITY | UNIT |
|-----------------|--------------------------------|----------|------|
| 009E0010 | Mobilization | Lump Sum | LS |
| 110E0510 | Remove Pipe End Section | 1 | Each |
| 450E2036 | 48" RCP Flared End, Furnish | 1 | Each |
| 450E2037 | 48" RCP Flared End, Install | 1 | Each |
| 620E0030 | Type 3 Right-of-Way Fence | 100 | Ft |
| 620E0515 | Type 1A Temporary Fence | 200 | Ft |
| 620E1020 | 2 Post Panel | 1 | Each |
| 634E0010 | Flagging | 20.0 | Hour |
| 634E0110 | Traffic Control Signs | 137.0 | SqFt |
| 634E0120 | Traffic Control, Miscellaneous | Lump Sum | LS |
| 700E0310 | Class C Riprap | 420.0 | Ton |
| 734E0010 | Erosion Control | Lump Sum | LS |
| 831E0110 | Type B Drainage Fabric | 200 | SqYd |

SEQUENCE OF OPERATIONS

1. Install traffic control measures.
2. Remove existing fence and install temporary fence as necessary.
3. Place perimeter erosion control measures.
4. Complete the erosion repair riprap and culvert work.
5. Place final erosion control and fencing.
6. Remove the temporary traffic control measures.

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>

ENVIRONMENTAL COMMITMENTS continued

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment shall be power washed with hot water (≥ 140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at: <http://sdleastwanted.com/maps/default.aspx>

< [South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04](https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04) >

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

| | | | |
|-----------------------------|---------|-------|-----------------|
| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
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COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

EROSION REPAIR SD 37 MRM 2.7

The existing pipe end section will be removed and become property of the contractor. After pipe end section removal, the existing embankment will be shaped and compacted to the satisfaction of the Engineer. It is not anticipated that embankment will be added but the existing material will be shaped to create 2 feet minimum depth for the riprap placement at all edges and to allow the drainage fabric to fit the slopes properly.

Type B Drainage fabric will be placed on all surfaces to receive riprap. Class C riprap will be placed to the cross section shown in the plans. The new pipe end section will be placed, and new bolts provided to attach the section to the remaining in place pipe culvert.

The cross sections on sheet 4 are for estimating purposes only. The contractor will visit the site prior to bidding to determine the extent of the continued erosion. Due to continued erosion it is anticipated the depth of riprap may need to be varied to match the conditions at the time of construction. Section A-A is located 55 feet from centerline (under the pipe end section). Section B-B is located 65 feet from centerline. Section C-C is located 75 feet from centerline at the Right-Of-Way line. The riprap slope outside the Right-Of-Way will taper to 3 feet deep at the end at a 1:1 slope.

The new pipe end section will be placed above the riprap and will be bedded with 6 inches of Base Course Salvaged, State Furnished. The Base Course Salvaged, State Furnished will be obtained from the SD DOT Maintenance yard at Tyndall, SD and will be transported and placed by the contractor. Type B Drainage fabric will be placed on the top of the riprap prior to the placement of the Base Course Salvaged, State Furnished. The costs to load, transport and place Base Course Salvaged, State Furnished will be incidental to the unit bid price for 48" RCP Flared End, Install.

Topsoil will be salvaged and replaced along the edges of the riprap and culvert placement. All costs for the erosion control work for salvaging and replacing topsoil will be incidental to the contract lump sum price for "Erosion Control".

EROSION CONTROL

The estimated area requiring erosion control is 2000 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching will be incidental to the contract lump sum price for "Erosion Control".

The limits of erosion control work will be determined by the Engineer during construction.

MULCHING (GRASS HAY OR STRAW)

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except those covered by riprap.

Type G Permanent Seed Mixture will consist of the following:

| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------|
| Western Wheatgrass | Arriba, Flintlock, Rodan, Rosana, Walsh | 7 |
| Switchgrass | Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer | 3 |
| Indiangrass | Holt, Tomahawk, Chief, Nebraska 54 | 3 |
| Big Bluestem | Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza | 3 |
| Oats or Spring Wheat: April through May; Winter Wheat: August through November | | 10 |
| Total: | | 26 |

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

- 25% *Glomus intraradices*
- 25% *Glomus aggregatum or deserticola*
- 25% *Glomus mosseae*
- 25% *Glomus etunicatum*

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The mycorrhizal inoculum will be as shown below or an approved equal:

Product

MycoApply

AM 120 Multi Species Blend

Manufacturer

Mycorrhizal Applications, Inc.
Grants Pass, OR
Phone: 1-866-476-7800
www.mycorrhizae.com

Reforestation Technologies Int.
Gilroy, CA
Phone: 1-800-784-4769
www.reforest.com

TEMPORARY FENCE

The Contractor will verify the need and location of the temporary fence with the landowner prior to installation of the fence. It is estimated that 200 feet of temporary fence will be required to isolate the work area.

TYPE 3 RIGHT-OF-WAY FENCE

The Contractor will install the right of way fence through the riprap upon completion of the riprap placement. The fence in the area above the riprap will be all steel posts and the steel posts will be set into the riprap with commercially available concrete. The concrete will be placed into the riprap to anchor the posts. It is estimated there will be 3 posts in the riprap area and it will require a minimum of 150 pounds of concrete per post for the anchors. Class A45 or M6 concrete may be substituted at no additional cost. The acceptance of this concrete will be based on visual inspection by the Engineer. It is estimated 100 feet of type 3 fence and one 2 post panel will be required to complete the fence installation. All costs to anchor the posts in the riprap will be incidental to the unit bid price for Type 3 Right-Of-Way Fence.

BRACE PANELS FOR ROW FENCE

The E-Z Brace or an approved equal may be utilized as an alternate horizontal brace in the brace panels if approved by the Engineer. The E-Z Brace will be attached to each wood post utilizing two 5/16" x 3" lag screws. Holes of appropriate diameter, based on wood post condition, will be drilled before placement of lag screws. The following are contacts regarding the E-Z Brace:

Roger Papka
E-Z Brace
1160 Karen St.
Watertown, SD 57201
605-881-6142

Dennis Mack
E-Z Brace
108 18th St. NE
Watertown, SD 57201
605-881-4990

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station. For this project it is anticipated that the normal duration will be less than 5 minutes since no pilot car will be used and only one flagger will be required for most situations.

All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Traffic Control Signs, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

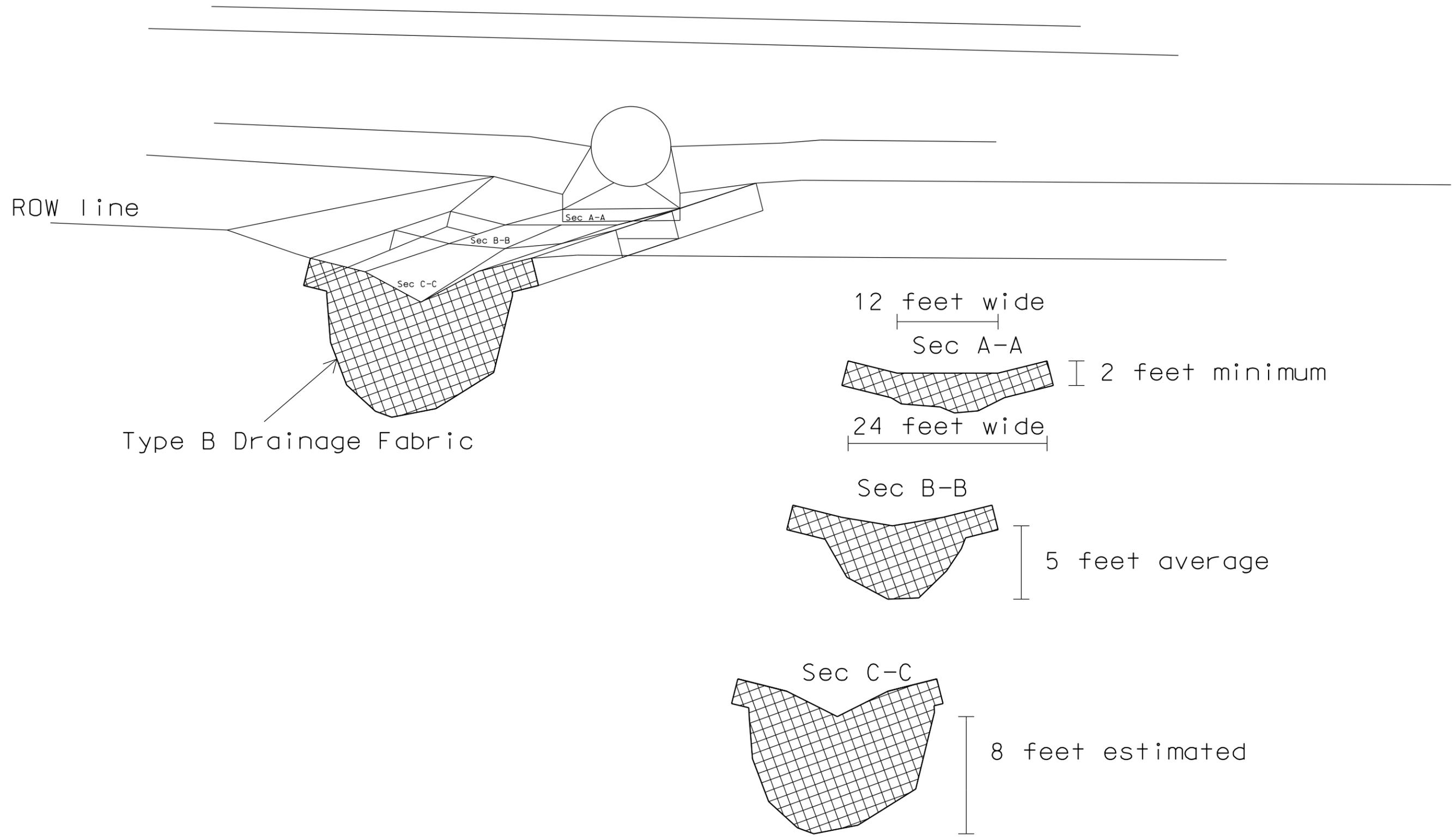
All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

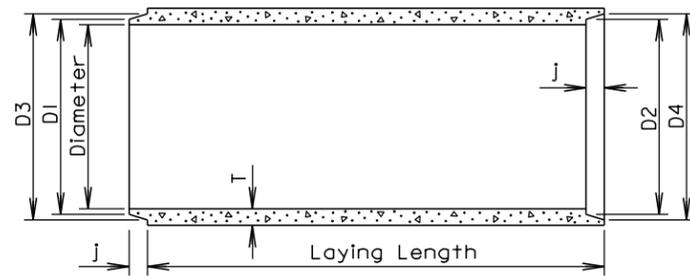
| SIGN CODE | SIGN DESCRIPTION | CONVENTIONAL ROAD | | | |
|-----------------------------------------------------|---------------------|-------------------|-----------|---------------|--------------|
| | | NUMBER | SIGN SIZE | SQFT PER SIGN | SQFT |
| W20-1 | ROAD WORK AHEAD | 2 | 48" x 48" | 16.0 | 32.0 |
| W20-4 | ONE LANE ROAD AHEAD | 2 | 48" x 48" | 16.0 | 32.0 |
| W20-7 | FLAGGER (symbol) | 2 | 48" x 48" | 16.0 | 32.0 |
| W21-5 | SHOULDER WORK | 2 | 48" x 48" | 16.0 | 32.0 |
| G20-2 | END ROAD WORK | 2 | 36" x 18" | 4.5 | 9.0 |
| CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT | | | | | 137.0 |

EROSION REPAIR TYPICAL SECTIONS

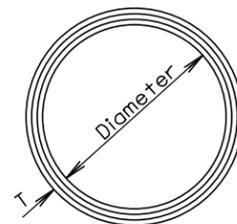


TOLERANCES IN DIMENSIONS

Diameter: $\pm 1.5\%$ for 24" Dia. or less and $\pm 1\%$ or $\frac{3}{8}$ " whichever is more for 27" Dia. or greater.
 Diameters at joints: $\pm \frac{3}{16}$ " for 30" Dia. or less and $\pm \frac{1}{4}$ " for 36" or greater.
 Length of joint (j): $\pm \frac{1}{4}$ ".
 Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}$ ", whichever is greater.
 Laying length: shall not underrun by more than $\frac{1}{2}$ ".



LONGITUDINAL SECTION



END VIEW

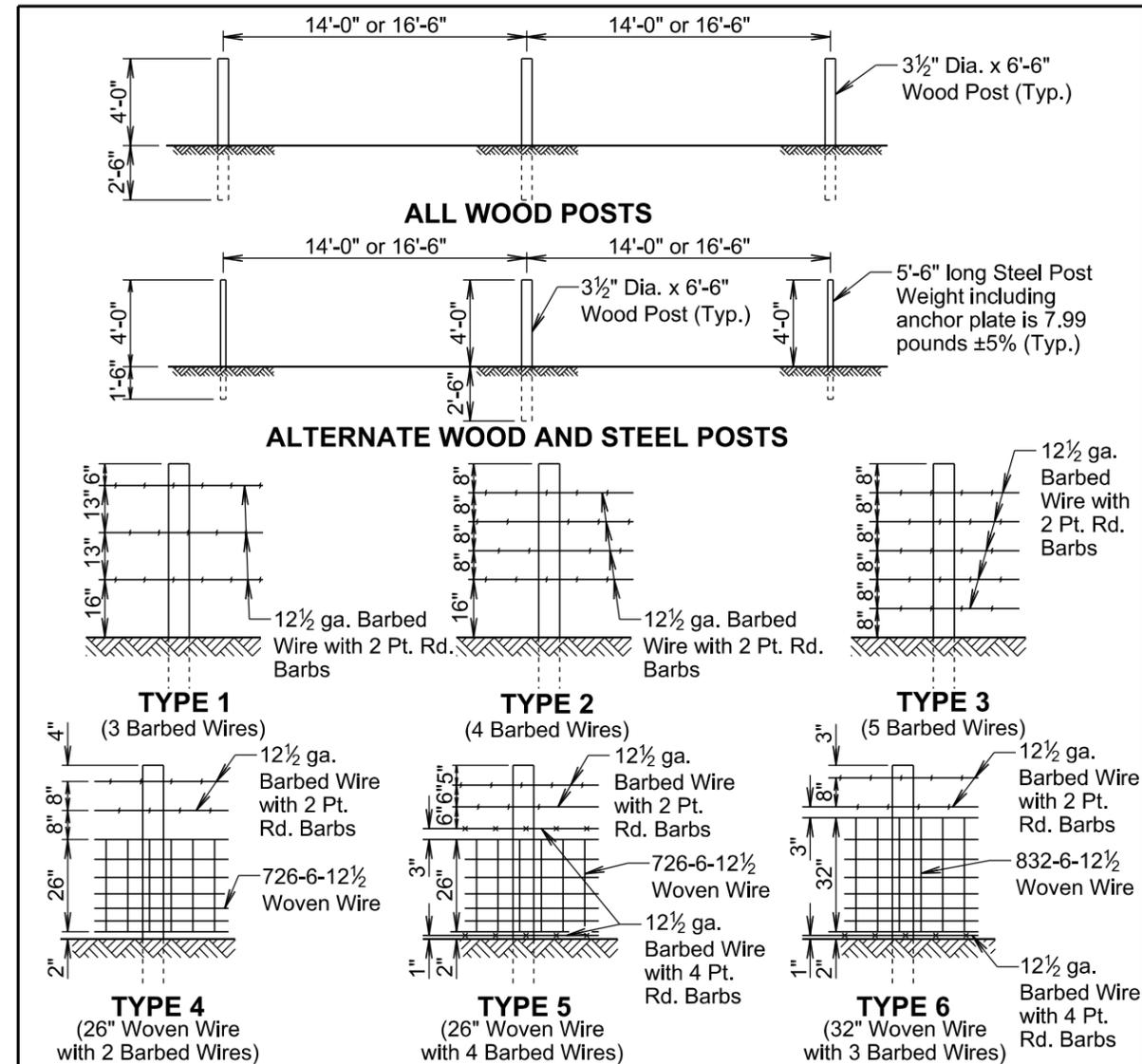
GENERAL NOTES:

Construction of R. C. P. shall conform to the requirements of Section 990 of the Specifications.

Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

| Diam. (in.) | Approx. Wt. /Ft. (lb.) | T (in.) | J (in.) | D1 (in.) | D2 (in.) | D3 (in.) | D4 (in.) |
|-------------|------------------------|---------|---------|----------|----------|----------|----------|
| 12 | 92 | 2 | 1 3/4 | 13 1/4 | 13 5/8 | 13 7/8 | 14 1/4 |
| 15 | 127 | 2 1/4 | 2 | 16 1/2 | 16 7/8 | 17 1/4 | 17 5/8 |
| 18 | 168 | 2 1/2 | 2 1/4 | 19 5/8 | 20 | 20 3/8 | 20 3/4 |
| 21 | 214 | 2 3/4 | 2 1/2 | 22 7/8 | 23 1/4 | 23 3/4 | 24 1/8 |
| 24 | 265 | 3 | 2 3/4 | 26 | 26 3/8 | 27 | 27 3/8 |
| 27 | 322 | 3 1/4 | 3 | 29 1/4 | 29 5/8 | 30 1/4 | 30 5/8 |
| 30 | 384 | 3 1/2 | 3 1/4 | 32 3/8 | 32 3/4 | 33 1/2 | 33 5/8 |
| 36 | 524 | 4 | 3 3/4 | 38 3/4 | 39 1/4 | 40 | 40 1/2 |
| 42 | 685 | 4 1/2 | 4 | 45 1/8 | 45 5/8 | 46 1/2 | 47 |
| 48 | 867 | 5 | 4 1/2 | 51 1/2 | 52 | 53 | 53 1/2 |
| 54 | 1070 | 5 1/2 | 4 1/2 | 57 7/8 | 58 3/8 | 59 3/8 | 59 7/8 |
| 60 | 1296 | 6 | 5 | 64 1/4 | 64 3/4 | 66 | 66 1/2 |
| 66 | 1542 | 6 1/2 | 5 1/2 | 70 5/8 | 71 1/8 | 72 1/2 | 73 |
| 72 | 1810 | 7 | 6 | 77 | 77 1/2 | 79 | 79 1/2 |
| 78 | 2098 | 7 1/2 | 6 1/2 | 83 3/8 | 83 7/8 | 85 5/8 | 86 1/8 |
| 84 | 2410 | 8 | 7 | 89 3/4 | 90 1/4 | 92 1/8 | 92 5/8 |
| 90 | 2740 | 8 1/2 | 7 | 95 3/4 | 96 1/4 | 98 1/8 | 98 5/8 |
| 96 | 2950 | 9 | 7 | 102 1/8 | 102 5/8 | 104 1/2 | 105 |
| 102 | 3075 | 9 1/2 | 7 1/2 | 109 | 109 1/2 | 111 1/2 | 112 |
| 108 | 3870 | 10 | 7 1/2 | 115 1/2 | 116 | 118 | 118 1/2 |

June 26, 2015



| TYPE | DESCRIPTION | LINE POST SPACING | BARBED WIRE | | WOVEN WIRE |
|------|------------------------------------|-------------------|-------------|--------------------------------------------------|---------------------|
| | | | WIRE GAGE | NUMBER AND SHAPE OF BARBS | STYLE OR DESIGN NO. |
| 1 | 3 Barbed Wires | 16'-6" | 12 1/2 | 2 Point Round | — |
| 2 | 4 Barbed Wires | 16'-6" | 12 1/2 | 2 Point Round | — |
| 3 | 5 Barbed Wires | 16'-6" | 12 1/2 | 2 Point Round | — |
| 4 | 26" Woven Wire with 2 Barbed Wires | 14'-0" | 12 1/2 | 2 Point Round | 726-6-12 1/2 |
| 5 | 26" Woven Wire with 4 Barbed Wires | 14'-0" | 12 1/2 | 2 wires with 2 Pt. Rd. 2 wires with 4 Pt. Rd. | 726-6-12 1/2 |
| 6 | 32" Woven Wire with 3 Barbed Wires | 14'-0" | 12 1/2 | 2 wires with 2 Pt. Rd. 1 wire with 4 Pt. Rd. | 832-6-12 1/2 |

GENERAL NOTES:

Fence types designated on the plans that are followed by the letter S will have smooth (barbless) wires.

When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.

All degrees of curvature stated for fence are at centerline of roadway.

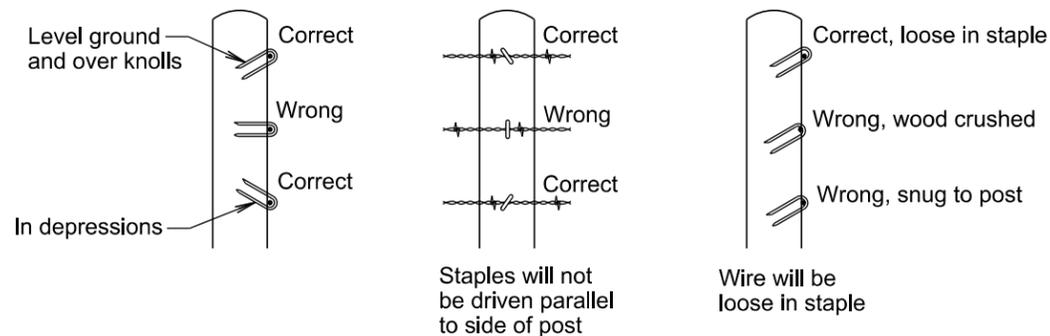
June 26, 2019

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| S D D O T | REINFORCED CONCRETE PIPE | PLATE NUMBER 450.01 |
| | | Sheet 1 of 1 |

Published Date: 1st Qtr. 2021

| | | |
|----------------------------------|---------------------------|-------------------------------|
| S D D O T | RIGHT-OF-WAY FENCE | PLATE NUMBER 620.01 |
| | | Sheet 1 of 1 |

Published Date: 1st Qtr. 2021



STAPLE INSTALLATION

GENERAL NOTES:

The Right-of-Way fence will consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire will be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts will be used for brace panels. Gates will be of the type designated in the plans or as otherwise directed by the Engineer. Fence will be constructed conforming to the details on the standard plates and in the plans unless otherwise directed by the Engineer.

Right-of-Way fence on Interstate Projects will be constructed one foot within the Interstate Right-of-Way lines except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

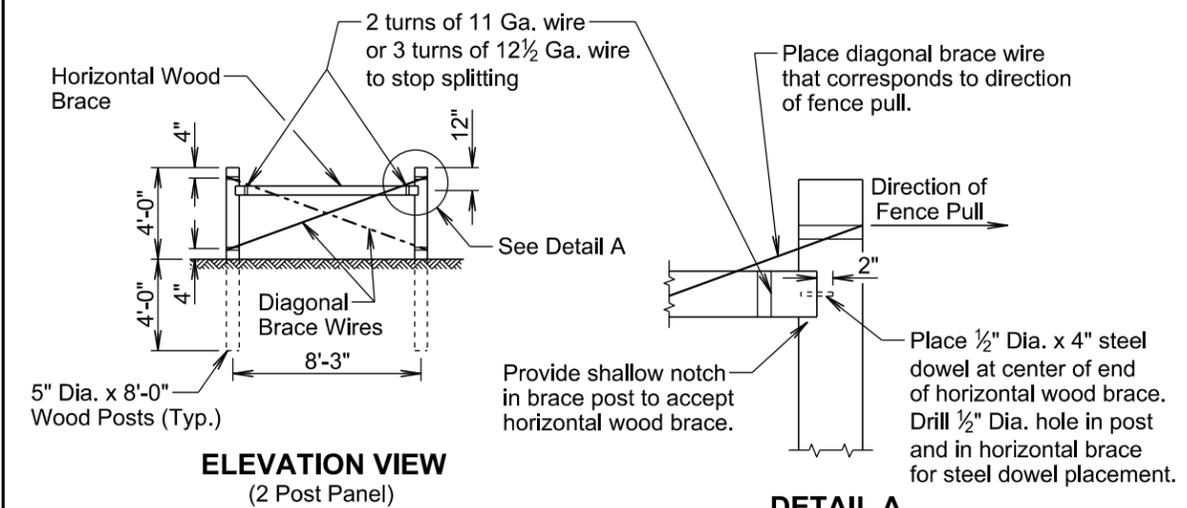
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Barbs will be fabricated from zinc coated 14 ga. wire. Two point barbs will be wrapped twice around one main strand at four-inch spacings and the four point barbs will be interlocked and wrapped around both main strands at five-inch spacings.

The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts will be as stated in AASHTO M281. Woven wire will conform to design and specifications of ASTM A116 and barbed wire will conform to ASTM A121.

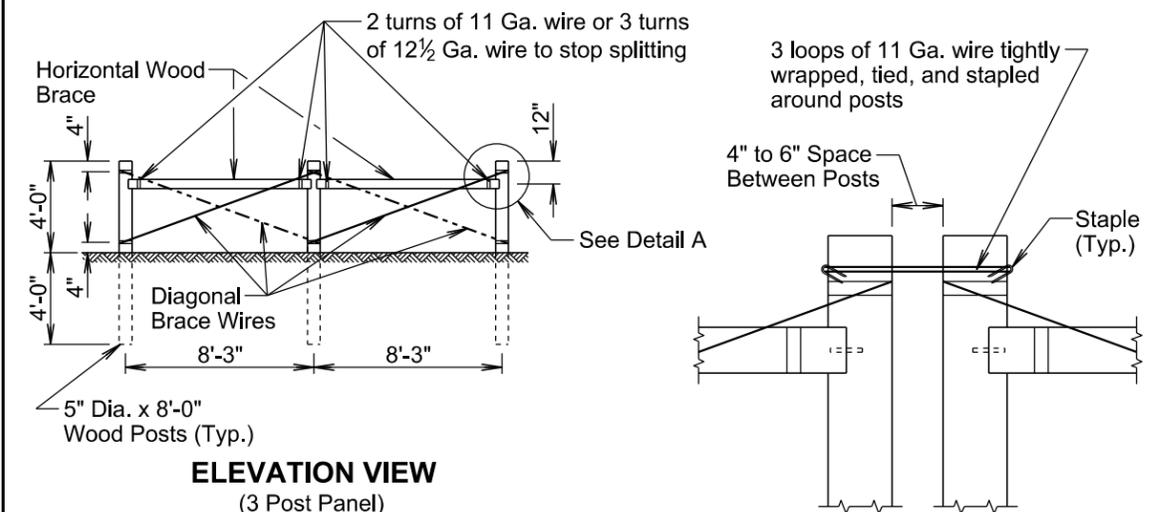
June 26, 2019

| | | | |
|-------------------------------|-----------------------|-------------------------------------------------------------|------------------------|
| Published Date: 1st Qtr. 2021 | S D D O T | STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES | PLATE NUMBER 620.02 |
| | | | Sheet 1 of 1 |



ELEVATION VIEW
(2 Post Panel)

DETAIL A



ELEVATION VIEW
(3 Post Panel)

DETAIL B

GENERAL NOTES:

Two Post Panels will be installed at least every 1320' between corners.

Two Post Panels will be installed at any sharp vertical angle crest points and as directed by the Engineer.

Horizontal wood braces will consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires will be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires will be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

June 26, 2019

| | | | |
|-------------------------------|-----------------------|--------------------------------------------------|------------------------|
| Published Date: 1st Qtr. 2021 | S D D O T | BRACE PANELS AND APPLICATIONS OF BRACE PANELS | PLATE NUMBER 620.03 |
| | | | Sheet 1 of 3 |

| SPACING OF 2 POST PANELS WITHIN CURVES | DEGREE OF CURVE | SPACING OF 2 POST PANEL |
|----------------------------------------|-----------------|------------------------------------------------------------|
| less than 3°15' | | ** 1320' |
| 3°15' and greater | | ** At P.C., P.T., and at every 1320' between P.C. and P.T. |

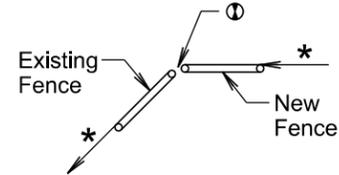
GENERAL NOTE:

All degrees of curvature stated for fence are at centerline of roadway.

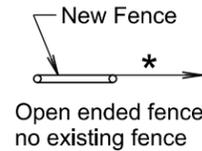
- * If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

- ** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

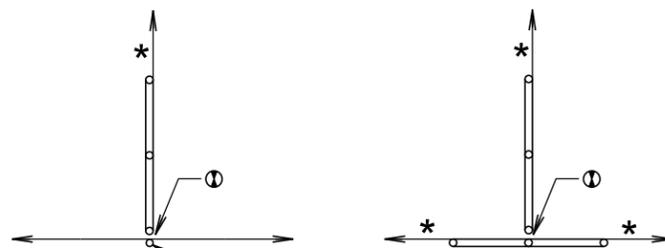
① See Detail B on Sheet 1 of 3.



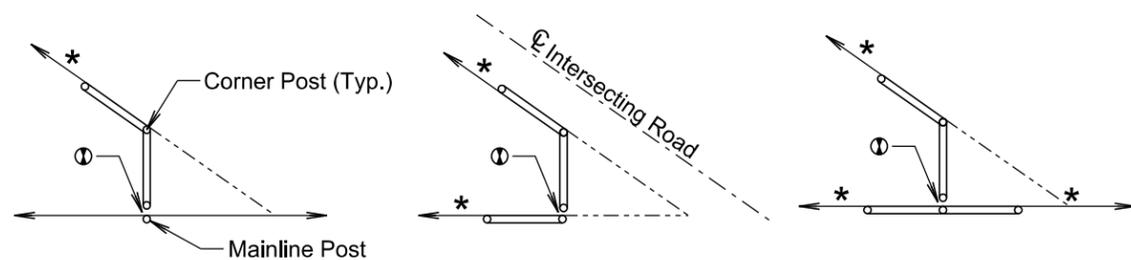
BEGIN OR END FENCE
(Where new fence ties into existing fence)



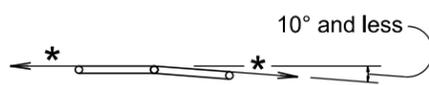
SHORT JOGS IN FENCE



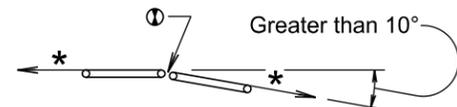
CROSS FENCE



SHARP ANGLES IN CROSS FENCE



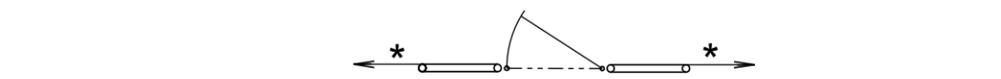
Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.



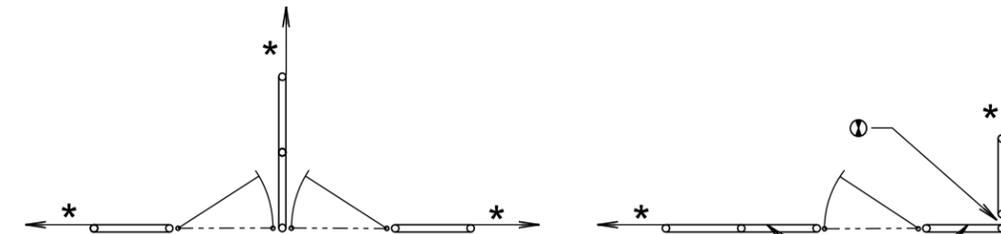
Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

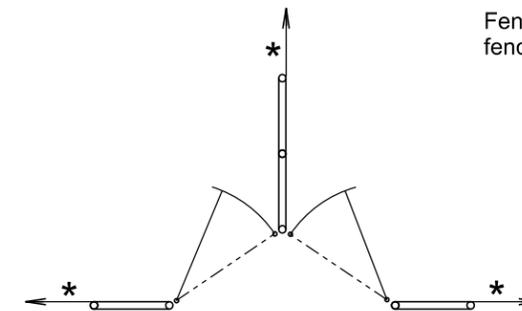
June 26, 2019



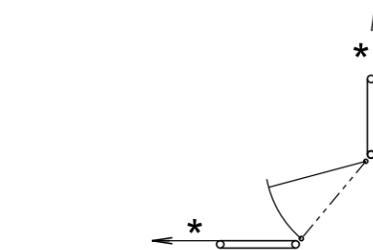
ENTRANCE
(Not on corner)



Fence type will be same as adjacent fence type or as directed by the Engineer.



DOUBLE ENTRANCES



ENTRANCES AT CORNERS

GATES

- * If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

① See Detail B on Sheet 1 of 3.

June 26, 2019

| Posted Speed Prior to Work (M.P.H.) | Spacing of Advance Warning Signs (Feet) (A) | Spacing of Channelizing Devices (Feet) (C) |
|-------------------------------------|---------------------------------------------|--------------------------------------------|
| 0 - 30 | 200 | 25 |
| 35 - 40 | 350 | 25 |
| 45 | 500 | 25 |
| 50 | 500 | 50 |
| 55 | 750 | 50 |
| 60 - 65 | 1000 | 50 |

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

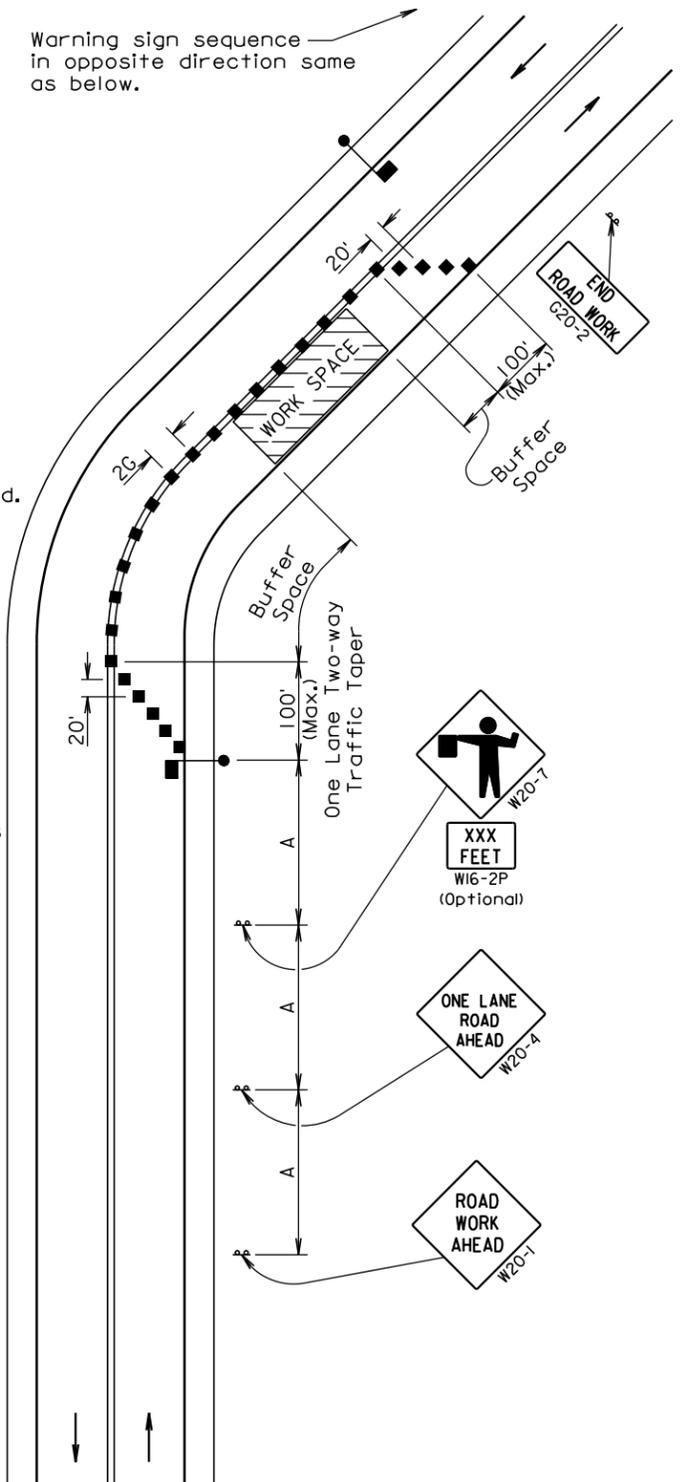
2-029
ROAD WORK
END

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

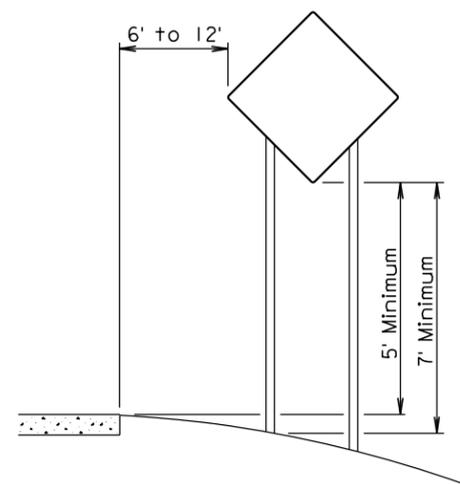
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

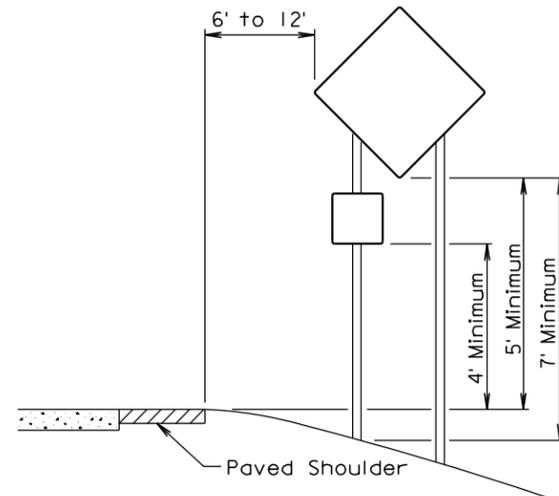
Warning sign sequence in opposite direction same as below.



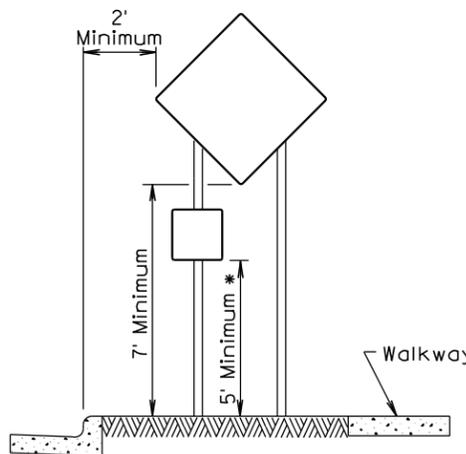
June 3, 2016



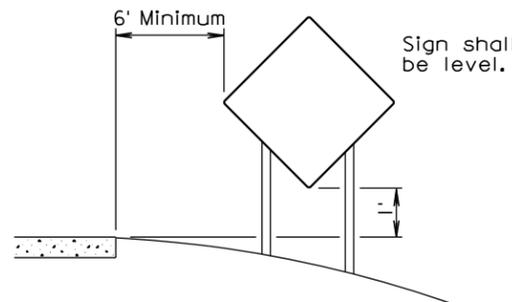
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT



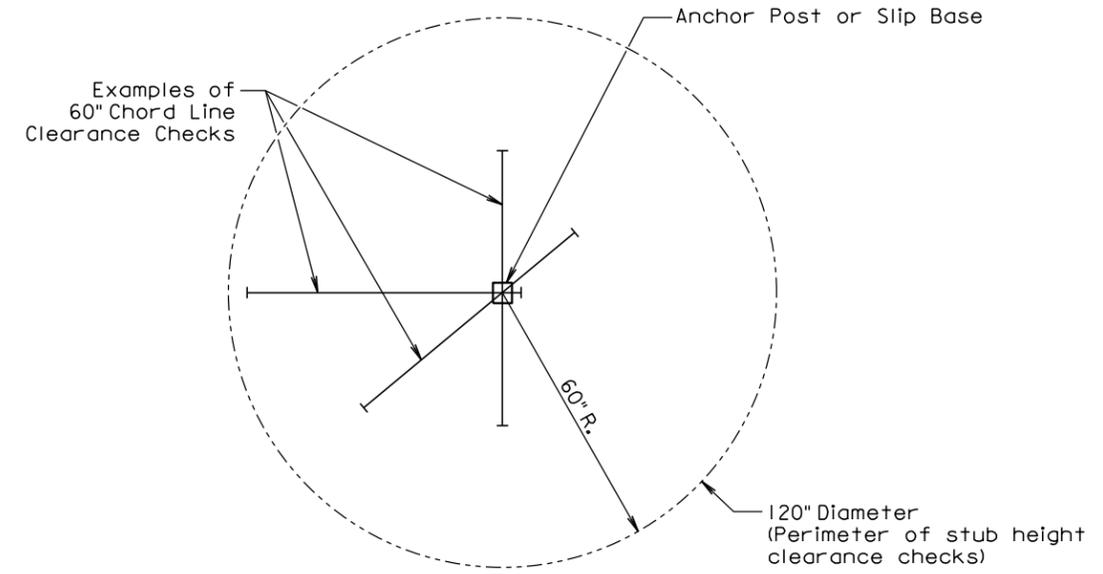
RURAL DISTRICT 3 DAY MAXIMUM

(Not applicable to regulatory signs)

* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

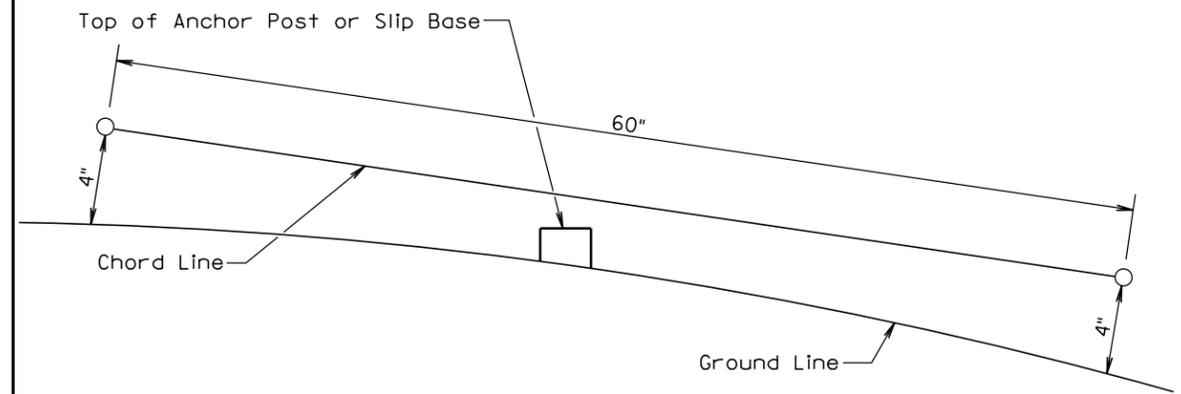
September 22, 2014

| | | | |
|-------------------------------|-----------------------|-------------------------------------------------------------|------------------------|
| Published Date: 1st Qtr. 2021 | S D D O T | CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing) | PLATE NUMBER 634.85 |
| | | | Sheet 1 of 1 |



PLAN VIEW

(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.
 At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.
 The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

| | | | |
|-------------------------------|-----------------------|----------------------------------|------------------------|
| Published Date: 1st Qtr. 2021 | S D D O T | BREAKAWAY SUPPORT STUB CLEARANCE | PLATE NUMBER 634.99 |
| | | | Sheet 1 of 1 |